

**REMARKS**

Applicants appreciate the Examiner's thorough review of the present application, and respectfully request reconsideration in light of the preceding amendments and the following remarks.

Claims 1-5 and 7-18 are pending in the application. Claim 6 has been cancelled and rewritten as new independent claim 12. Claims 1, 3-5, 7-11 have been amended solely to improve the claim language, and not to distinguish the claimed invention from the applied art of record. New claims 13-18 have been added to provide Applicants with the scope of protection to which they are believed entitled.

The specification has been revised to correct minor typographical errors.

No new matter has been introduced through the foregoing amendments.

The Examiner's 35 U.S.C. 103(a) rejection of claims 1-11 as being unpatentable over Kobayashi (U.S. Patent No. 4,293,986) in view of Onishi (U.S. Patent No. 5,920,142) is not well founded and, therefore, traversed.

Differences between the claimed invention and the applied references are as follows:

U.S. Patent No. 4,293,986 to Kobayashi discloses quartz crystal vibrator leaf 124 and eutectic forming materials 131,132. Eutectic forming materials 131, 132 are formed on either frame portion 124b of quartz crystal vibrator leaf 124 or on metal films 129, 130 on seal portions 125b, 126b of upper and lower housing elements 125, 125. See Fig. 9 of Kobayashi. A hermetic sealing effect is provided by sandwiching quartz crystal vibrator leaf 124 between upper and lower housing elements 125 and 126, and then fusing eutectic forming materials 131, 132 by heating all components in vacuum. Eutectic forming materials 131, 132 are fused and form eutectic alloys with metal films 129, 130. See column 9, lines 32-44 of Kobayashi. Thus, eutectic forming materials 131, 132 are used for forming a hermetic seal and for preventing breakage or destruction caused by mechanical external forces applied to the housing elements while the hermetic seal is being formed. However, the resin layer of the present invention is not used for sealing. In

particular, the insulating resin layer of the present invention is different from eutectic forming materials 131, 132 of Kobayashi in that the insulating resin layer of the present invention presses down the conductive adhesive so that the quartz blank is firmly secured. Thus, the claimed resin layer functions to fix the quartz blank in position, and also acts as a shock absorber between the cover and the quartz blank.

Moreover, in Kobayashi, quartz crystal vibrator leaf 124 is supported by upper and lower housing 125 and 126. Fig. 8 of Kobayashi shows that eutectic forming material 122 is only used for sealing, not for supporting the quartz crystal vibrator leaf. In Fig. 8, quartz crystal vibrator leaf 117 is mounted on housing element 118. Thus, eutectic forming materials 131, 132 in Fig. 9 of Kobayashi do not act as a supporting or shock absorbing element.

Finally, quartz crystal vibrator leaf 3 shown in Fig. 5 of Kobayashi does not include connecting parts of an extended length L, , as presently claimed. Thus, the stress caused by an external impact cannot be adequately dampened.

US 5,920,142 to Onishi discloses space retainer 5 which comprises a support layer 5a and a cover 5b. Support layer 5a closely contacts main surface 21, thereby ensuring hermetic sealing between the support layer and the main surface. See Fig. 5. Thus, support layer 5a provides an oscillation space and is not arranged to support an element such as a chip, quartz blank, etc. However, as mentioned above, the claimed resin layer functions to fix the quartz blank in position, and also acts as a shock absorber between the cover and the quartz blank

Moreover, space retainer 5 of Onishi actually corresponds to the main body and the cover 170 of the present invention. In this connection, support layer 5a of Onishi corresponds to securing means (unnumbered element in Fig. 5a-5d) between the main body and the cover of the present invention which secures the cover to the main body. Therefore, support layer 5a of Onishi is different from the claimed insulating resin layer of the present invention.

It should be now clear that the claimed invention is clearly distinguished from the applied references both structurally and functionally. For this reason alone, the 35 U.S.C. 103(a) rejection

of claims 1-11 should be withdrawn. Applicants will, nevertheless, further point out supposed errors in the Examiner's rejection.

As to independent claim 1, the applied references, especially Kobayashi, fail to disclose, teach or suggest the claimed **conductive adhesive**. The Examiner does not specify where in the references the claimed feature might be found or suggested. See page 2, line 9 from bottom of the Office Action. Clarification is respectfully requested.

The Examiner states that it would have been obvious to replace the eutectic materials of Kobayashi with the synthetic resin materials as taught by Onishi. Applicants respectfully disagree, and submit that such a modification would render the Kobayashi device unsatisfactory for its intended purpose. An object of Kobayashi is provide a quartz crystal oscillator package having a high level of internal vacuum and a good hermetic seal at the peripheral edges which does not substantially outgas during the process of joining. See column 2, lines 30-40. To achieve this object, the Kobayashi eutectic materials are arranged to form an eutectic alloy with metal layers 129, 130. Replacing the eutectic materials with resin would defeat the Kobayashi intended purpose of forming a hermetic seal by the eutectic alloy.

Moreover, the Examiner's proposed combination would render the reference being modified, i.e., Kobayashi, inoperative. As can be seen in Fig. 9 of Kobayashi, eutectic materials 131, 130 functions not only as a seal between the housing elements, but also as conductive elements connecting inner electrodes 127, 128 to outer terminals 126c, 125c. Replacing the eutectic materials with resin, which is not described or suggested by Onishi as being conductive, would result in electrical isolation between inner electrodes 127, 128 and outer terminals 126c, 125c. The modified device would be inoperative.

Accordingly, Applicants respectfully submit that the rejection of claim 1 is erroneous and should be withdrawn.

Claims 2-11 are considered patentable at least for some or all of the reasons advanced with respect to claim 1. Claims 2-11 are also patentable on their own merit since these claims recite other features of the invention neither disclosed, taught nor suggested by the applied art.

As to claims 3-5 and 6 (now new claim 12), the applied references, especially Kobayashi, fail to disclose, teach or suggest that **the resin layer is formed on sides of the quartz blank**, as recited in claim 3. The Examiner does not specify where in the references the claimed feature might be found or suggested. Clarification is respectfully requested.

Applicant further submit that the references are not combinable or modifiable to include the claimed feature of claims 3-5. As discussed above, the purpose of the Kobayashi eutectic materials is to seal the upper and lower housing elements together. Thus, it is sufficient to place the eutectic materials on top and at the bottom of leaf 127. A person of ordinary skill in the art would not have seen a reason why the eutectic materials have to be placed on sides of the leaf. When the eutectic materials are replaced with resin as propose by the Examiner, the resulting device would still lack the claimed resin layer that is formed on sides of the quartz blanks.

Accordingly, Applicants respectfully submit that the rejection of claims 3-6 is erroneous and should be withdrawn.

As to claims 7-11, the applied references, especially Kobayashi, fail to disclose, teach or suggest that the outer edge of the connecting part has a **slant section** which is slanted with respect to the outer edge of the corresponding bridge part, as recited in independent claim 7. Fig. 5 of Kobayashi shows no slant edge.

As to claims 9-10, the Examiner's reliance on In re Aller is also misplaced. It should be noted that while In re Aller still remains good law, there are numerous exceptions to this rule e.g. In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977) discussed in MPEP section 2144.05. II. B. The court in In re Antonie stated that "a particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation." Id. In this particular case, application of In re Aller might be proper only if the art, prior to the present invention, has recognized the claimed ratios/dimensions as a result-effective variable. The Examiner has produced no evidence to prove this point.

As to claim 11, the applied references, especially Kobayashi, fail to disclose, teach or suggest *both* limitations that a width of the connecting part is larger than a width of the bridge parts, and an inside edge of the connecting part is straightly aligned with an inside edge of the respective bridge part. The Examiner does not specify where in the references the claimed features might be found or suggested. See the paragraph bridging pages 2-3 of the Office Action. Clarification is respectfully requested.

Accordingly, Applicants respectfully submit that the rejection of claims 7-11 is erroneous and should be withdrawn.

New claims 13-18 find solid support in the original specification and the drawings, especially Figs. 5a-5d and Fig. 6. Claims 13-18 are clearly patentable over the applied art, as will be apparent to the Examiner upon reviewing the same.

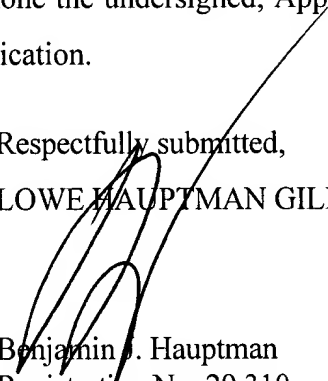
For example, the applied references, especially Kobayashi, fails to disclose, teach or suggest a closed space in which the supporting protuberances, the conductive adhesive, the quartz blank, and the insulating resin layer are *completely* disposed, as recited in claims 17-18. See also Fig. 9 of Kobayashi.

Each of the Examiner's rejections has been traversed. Accordingly, Applicants respectfully submit that all claims are now in condition for allowance. Early and favorable indication of allowance is courteously solicited.

The Examiner is invited to telephone the undersigned, Applicant's attorney of record, to facilitate advancement of the present application.

Respectfully submitted,

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